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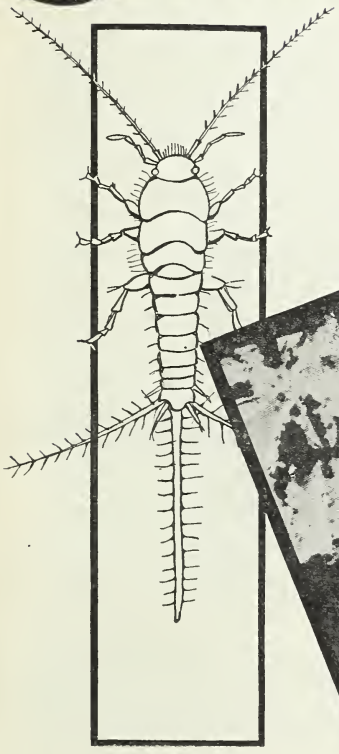
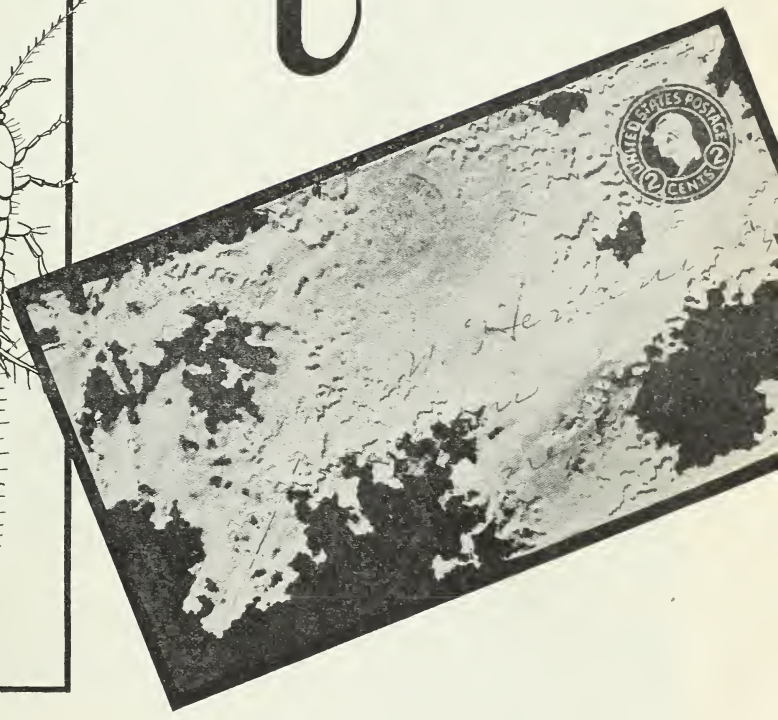
Silverfish





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SILVERFISH

By E. A. Back, *principal entomologist, Division of Insects Affecting Man and Animals, Bureau of Entomology and Plant Quarantine*

Silverfish are slender, wingless, scale-covered insects, slightly more than three-eighths of an inch long, with three long tail-like appendages at the hind end of the body, and with two long, slender feelers at the head end. They are nocturnal, hiding during the daytime, and are not often seen except when objects are moved. They then dart suddenly from recesses thus exposed and glide quickly out of sight, often thwarting all attempts to catch them. There are at least two species. The more common one (*Lepisma saccharina* L.) (fig. 1) has a uniform silvery or pearl-gray color; the other, called the fire brat (*Thermobia domestica* Pack.) (fig. 2), is distinguished by the dusky markings on its back.

Injury by silverfish has increased greatly during the last 10 years, probably because of the increase in the number of evenly heated houses.

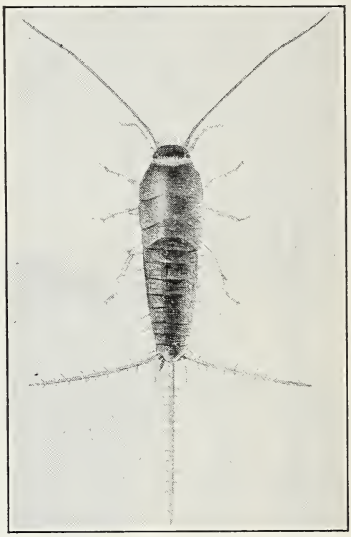

Figure 1.—Adult of the common silverfish (dorsal view). Three times natural size.

Where Found

Silverfish thrive best in damp, warm basements, but cause serious harm almost anywhere, even in rooms and attics in country homes that are never artificially heated. The fire brat is more apt to be found in very warm situations. In apartment houses silverfish are most abundant in heated basements, from which they follow pipe lines to apartments on the lower floors. They are likely to be present in surprisingly large numbers in new buildings the walls of which are still damp. Coal deliveries do not bring silverfish to apartment houses, as some believe.

Food

Silverfish feed upon the sizing in paper (fig. 3), bookbindings, wallpaper, and starchy insulation materials, and may do much harm to these. They eat holes to some extent in thin fabrics, particularly those of rayon. Starched clothing and lace curtains may be ruined by silverfish as they extract the starch from them. Experiments indicate that they prefer vegetable foods having a high starch or sugar content and are very fond of moist wheat flour.

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Life History

A thorough study has not been made of the biology of silverfish. From available data, however, it would seem that in a temperate climate females lay from 6 to 10 eggs each, late in spring. In one instance under observation all egg laying was confined to the month of May. The writer found many eggs in the folds of an infested map during October in a heated building in Washington, D. C., which indicates that egg laying may occur at all seasons of the year in heated buildings. One investigator, J. A. Adams, found that at an even temperature of 98.6° F. the fire brat reproduces at all seasons of the year.

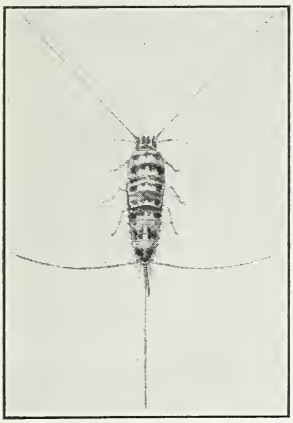

FIGURE 2.—Adult of the fire brat (dorsal view). Twice natural size.

The eggs of the common silverfish are about one thirty-second of an inch long, oval, whitish, without apparent sculpturings. They are not attached to paper, but roll about freely and can be shaken off easily. When temperatures range between 64° and 68° F. the eggs may not hatch for from 46 to 60 days after being laid, but in warm weather they may hatch in from 6 to 10 days.

The newly hatched silverfish closely resembles the parent insect in form and general appearance, and the similarity continues throughout the immature stages. It is claimed that in the Tropics the common silverfish matures in from 7 to 9 months, but in temperate climates it requires about 2 years to reach maturity. Larvae hatching in July, from eggs laid in May, have been known to pass two winters in the immature state. The females among these individuals matured and began laying eggs in May of the second year and died not later than August of that year. Adams found that at an even temperature of 98.6° F. the fire brat completed a generation in about 11 weeks, of which only about 15 days was spent in the egg stage.

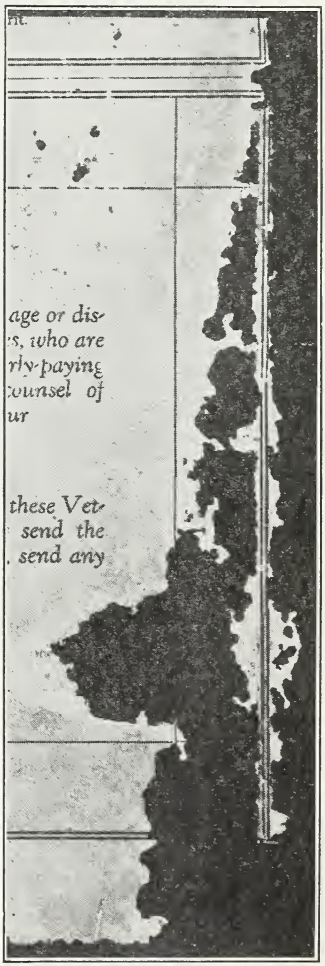

FIGURE 3.—Destruction of a printed page by silverfish.

It would seem that silverfish develop very slowly under usual house conditions and have few young, but are very hardy and able to subsist under unfavorable food conditions for long periods. Adults have been kept alive without food for as long as 319 days.

Others given access to food have been recorded as living from 675 days to 3 years.

Control

Silverfish are controlled most cheaply by the use of a poisoned bait. An excellent bait can be made of the following ingredients in the proportions indicated:

Oatmeal (ground to flour)	100 parts by weight or about 1¾ cupfuls.
White arsenic	8 parts by weight or about ¼ teaspoonful.
Granulated sugar	5 parts by weight or about ½ teaspoonful.
Salt	2½ parts by weight or about ¼ teaspoonful.

Mix together dry, the oatmeal, white arsenic, sugar, and salt. Moisten the mass and mix thoroughly to bind the substances together. Then thoroughly dry the bait to prevent mold, and grind it into small bits so that it can be scattered easily.

Sodium fluoride powder can be substituted for the white arsenic in the above formula. If the substitution is made, simply mix the materials thoroughly, but do not add moisture.

The above amount of bait is enough to treat several houses. Place about a teaspoonful of the bait in each of several, or many, shallow cardboard boxes, such as necktie boxes, distribute the boxes near or in the haunts of the silverfish, and cover each box loosely with a crumpled sheet of paper.

Pyrethrum powder dusted or blown into places frequented by silverfish is also useful. For quickly killing the hordes of silverfish found overrunning basements and furnace and storage rooms, spray with a saturated solution of paradichlorobenzene in carbon tetrachloride. As the liquid evaporates the paradichlorobenzene recrystallizes as a fine snow over the objects sprayed, but will, in turn, evaporate, causing no injury. The best results are secured by keeping the rooms closed for 24 hours after spraying.

If the use of poisoned baits is unsuccessful, it is well to look for sources of reinfestation from surrounding rooms or buildings.

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